Assessing the Self-perceived Research Proficiency among Doctoral Counseling Students

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Abstract

This study provided a preliminary assessment of the adequacy of methodological training in a counselor education program. Twenty-four current and former doctoral students reported on their experiences with research training and self-perceived research proficiency via an online survey, and three students provided additional insight in individual interviews. We also analyzed the contents of the syllabi of the five methods courses offered in the program. Overall, students perceived a lack of proficiency in quantitative methods and a lack of opportunities to apply research skills in actual projects, even though the program offered a comprehensive sequence of methodological courses. We discussed the findings in light of our mission to train students who excel in all the professional identities of a counselor educator.

Keywords

research proficiency, research training, counselor-researcher

According to the Council for Accreditation of Counseling and Related Educational Programs (CACREP), doctoral students in counselor education programs should develop a professional identity that encompasses five dimensions: counseling, supervision, teaching, research and scholarship, and leadership and advocacy (CACREP, 2021). The training in research and scholarship involves (a) research designs appropriate to quantitative and qualitative research questions, (b) univariate and multivariate research designs and data analysis methods, (c) models and methods of instrument design and program evaluation, and (d) research ethics. Such training aims to equip students with the ability to create conference presentations, academic journal publications, and grant proposals. Most importantly, this researcher identity is expected to be infused with other identities as a counselor, supervisor, teacher, and advocate, even though students might focus more on one or a few aspects at different stages of their development (Dollarhide et al., 2012). These expectations require strategic planning in the multi-pronged training offered in doctoral counseling programs. Such expectations, in turn, starts with carefully assessing students' learning outcomes, together with the alignment between students' capability, curriculum design, and requirements according to the CACREP standards.

Nonetheless, students in counselor educator programs, like those in a multitude of social science disciplines, tend to demonstrate great variability in their mastery of research methods (Meier, 1999; Murtonen, 2015). In particular, the need to strengthen quantitative training in doctoral programs has been illustrated in a number of social science disciplines. Bowers (2017) argued that training for quantitative research methods needs to be strengthened in Education Leadership and Administration Preparation Programs so that administrators with Ph.D. or Ed.D. degrees will truly be able to make evidence-based decisions, particularly with regard to school improvement efforts. A similar call to increase literacy in quantitative methods was issued by

Canadian scholars (Counsell et al., 2016). The reasons for this inadequacy are complicated. Many students come to social science research with a practitioner background and mindset, while lacking sufficient quantitative preparation (Brown, 2017). As such, it is exceedingly challenging to balance the quantitative research curriculum with the subject matter curriculum for a student body with diverse levels of quantitative inclination. Although similar research in counseling education is lacking, it is conceivable that this dilemma in social science doctoral programs is to some extent appliable to counselor education programs.

While research on specific teaching pedagogy to enhance learning outcomes in methodological courses has been accumulating (e.g., Garfield & Ben-Zvi, 2007; Larson & Besett-Alesch, 2000), few researchers have assessed students' learning outcomes in methodological courses per se (Earley, 2014). This is a critical gap because student assessment provides a starting point for reflection on teaching, a criterion to evaluate teaching effectiveness, and a goal to improve teaching and curriculum (Wagner et al., 2011). As an initial step to address this gap in the field of counselor education, we conducted the present study to assess students' self-perceived competency in research methods in a CACREP-accredited doctoral program. Current and former doctoral students provided information on their experiences with research training via surveys and interviews. In addition, the contents of the syllabi of all methods courses were analyzed. We discussed the findings in light of our mission to train students who excel in all the professional identities of a counselor educator. Our goal was to provide preliminary empirical evidence for the status of methodological training in counselor education programs, identify areas for improvement, and build a vision for enhancing research in the counseling profession by strengthening research training in doctoral programs.

Research Training and Productivity among Counselor Educators

While research skills are often transferrable across social science disciplines, the counseling field has its unique set of needs and advantages in research training and productivity. Wester and Borders (2013) conducted a Delphi study and identified a list of 159 competencies required in the counseling field based on responses from leaders of counseling associations in the United States. These included skills, knowledge, and attitudes in the domain of informed and critical thinking (e.g., understand where to find relevant literature and resources, integrate results from multiple sources, connect the existing literature to the research question), steps in the research process (e.g., have in-depth knowledge of the selected methodology for a particular study that one is conducting, have knowledge of basic and advanced statistical analyses, and code qualitative data appropriate to the chosen methodology), as well as ethical and professional competence (e.g., have knowledge of professional ethical codes regarding research, identify ethical dilemmas, and know one's own limitations as a researcher). Finally, researchers in the counseling field were asked to produce and publish research relevant to practice and understandable to a broad audience. Although these skills were applicable primarily at the doctoral level, the authors argued that counseling students at the master's level should also consider their development of research competencies. This comprehensive list, albeit subjective, provided a starting point for students to evaluate their own development and for programs to evaluate the training they offer. More recently, a special issue was published by the Journal of Counseling and Development to provide guidance for conducting and publishing rigorous research to advance the counseling profession (Schmit & Giordano, 2021). In this special issue, expert authors in counseling implored researchers to build a strong foundation on traditional research methods and keep up with the latest methodological development, so that they will be able to generate research that is meaningful and beneficial to both the counseling profession and society.

In a related study, Peterson et al. (2015) assessed the research needs perceived by practicing counselors, who acknowledged a high need for research skills at work and hence a lack of mastery of those skills. These skills ranged from "set up and organize my data in a database" to "count how many people are at each score point" to "single-case research design." Further, there appeared to be differences in the perceived research training needs between school counselors and mental health counselors. Although the majority of the participants were master's degree (80.8%), the authors did not report on whether education level made a difference in the perceived research training needs. It is conceivable that counselors with Ph.D. degrees would have more research experience and thus would be less likely to report a need for training in basic research skills.

Accordingly, Borders et al. (2019) examined research training needs from the perspective of new counselor educators who recently completed their doctoral program. Participants reported both barriers and supports for research in multiple domains, including research mentoring and self-efficacy in research. Not surprisingly, deficiency in research training hampered research productivity as a new faculty. In contrast, interest and confidence in conducting research, together with research mentoring, were conductive to success.

Thus, the importance of research skills was echoed by discipline leaders, practitioners, and counselor educators; so was the call for strengthening research training, especially at the doctoral level (Borders et al., 2019). The first step in strengthening research training, however, is to critically examine its status quo.

The Need for Assessment and Improvement

Previous literature on research methods education focused on (a) characteristics of students that hinder the learning experiences of research methods, (b) pedagogical innovations to improve student learning outcomes, and (c) content of methods courses (Earley, 2014). Further research,

argued Earley, is needed to examine what student learning looks like in terms of what students actually have learned as a result of completing one or a set of methods courses, which means a focus on assessment.

Assessment of student learning outcomes is essential for improving research methods training because well-informed pedagogical decisions and approaches start with a sound and continual understanding of students' initial level, progress, as well as obstacles and goals (Wagner et al., 2011). It is critical to move beyond what courses are offered and what assignments are used because completing a course does not necessarily equate to acquiring the needed knowledge and skills. Therefore, an honest assessment of learning outcomes provides the foundation for improvement in teaching.

Aiken et al. (2008) updated their initial study in 1990 on the status of quantitative training in doctoral psychology programs. They concluded that, almost two decades later, advanced topics in statistics and measurement are still lacking in psychology programs. Most students get little exposure to recent advancement and innovation in quantitative methodology beyond introductory courses, which hinder their ability to pursue many interesting questions with the most appropriate research design. Similarly, an assessment of training in survey methodology across multiple social science disciplines revealed substantial gaps in course offerings and learning opportunities for students in a number of programs from different universities (Jans et al., 2015). Presuming that this was also true for counseling programs, we believe it is deeply concerning because survey is a rather common approach when it comes to quantitative research in counseling (i.e., Poynton et al., 2019).

Nonetheless, such an honest assessment in methodological training within counselor education programs is lacking, despite the expectation that Ph.D. students in counseling shall

embrace multiple professional identities as researcher-practitioner-professor. Without proper assessments, program leaders and faculty members would not know if their curriculum and pedagogy are adequate to meet the needs of students. The current study is intended to be a preliminary attempt to assess the self-perceived research proficiency among students among what classes they have completed or are scheduled to complete.

Methods

Research Design and Data Collection

The study protocol was approved by the university Institutional Review Board. The study comprised a student assessment component and a program assessment component to provide a multi-dimensional view of research methods training. For the student assessment, we adopted a mixed-methods sequential explanatory design (Creswell, 2003), which involved a survey of current and former doctoral students in a CACREP-accredited counselor education program and individual semi-structured interviews with three students. We sent a Qualtrics survey to the department listserv asking questions about students' self-perceived proficiency in research methods. Students were not compensated, and their participation was not related to any course grade. The purpose of the survey was to gauge the overall self-perceived research proficiency and interests among Ph.D. students. Following the surveys, we conducted individual interviews with a first-year, second-year, and third-year doctoral student about their research training experiences in their previous (undergraduate and master's) and current programs. The purpose of the interviews was to obtain additional information to aid the interpretation of the survey results, give a voice to students, and solicit student perspectives for program enhancement. It should be noted that the size of each cohort was about seven students, and these three students represented about 15% of each cohort. The researcher who conducted the interviews did not advise or supervise any of the students.

Therefore, any conflict of interest or embarrassment was minimized in the interview process. Additionally, the interviews were not recorded to increase the comfort level of participants, but extensive notes were taken during the interviews and reflection memos were developed immediately after each interview (Birks et al., 2008). Finally, the program assessment consisted of a content analysis of the syllabi of all methods courses (N = 5) currently being taught in the program. Reviewing the syllabi enabled us to examine the alignment between students' perceived competency and program offering.

Participants

We recruited the survey participants by sending emails to the departmental student listserv so that the survey would remain anonymous. The listserv included 69 email addresses, but some people had more than one email address listed. This list included 30 currently enrolled students. In the end, 24 responses were collected: four first-year, six second-year, seven third-year, five dissertation only, and two graduated. Thus, although we were not able to compute a precise response rate due to uncertainty in the denominator, the survey participants provided a reasonable representation in terms of stages in the students' career development as indicated by the cohort status.

One first-year, one second-year, and one third-year doctoral student were invited by the first author to participate in the interviews via email to currently enrolled students. Participants were selected on a first-come, first-serve basis. The invitation emails for interviews went out after the survey was closed.

Instruments for Survey and Interview

The Qualtrics survey included 11 questions (multiple-choice or open-ended) on methodological proficiency. Sample questions included "how often do you use SPSS" and "how

would you rate your own proficiency in understanding quantitative methods and results sections in research articles." These questions were intended to assess (a) personal preferences in methodological approaches, (b) self-perceived proficiency in research methods, and (c) perceived additional need for methodological training. The questions were identified as a result of the ongoing discussion at the program meetings regarding program goals and curriculum improvement. We selected only 11 questions to minimize survey fatigue, hoping that we would be able to use these questions as part of ongoing program assessment in the future. Individuals took an average of 10 minutes to complete the survey, according to Qualtrics recording.

The semi-structured interviews revolved around three topics: research-related training in undergraduate and master's programs, research experiences during PhD study, and interest in a career in academia. In order to promote self-disclosure from participants, the interviews were held in a casual conversation style guided by three prompting questions: (a) "what research-related training have you received in your undergraduate and master's programs," (b) "what are your research experiences in the current program," (c) "what are your career aspirations." Similar to our considerations for participants' time commitment, we attempted to limit the interview to be about half an hour. We found that half an hour was sufficient because the conversation stayed focused on these three questions.

Data Analyses

Survey Data. Frequency distributions were computed for survey responses. We used Chi-square to examine whether response patterns varied across cohort status (first-year, second-year, third-year, dissertation only, graduated). Due to the small cell size, p-values were interpreted based on Fisher's exact test (Stokes et al., 2012). Since this study is mainly exploratory, no hypotheses were tendered.

Interview Data. We built codes and identified themes from the memos and reflective notes (Vaismoradi et al., 2016). After going through the text, all the data was collated into groups and identified by a code. A code in qualitative inquiry is a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and evocative attribute for a portion of language-based or visual data (Saldaña, 2016). These codes allowed us to condense the main points and common meanings occurring throughout the data. We then looked over the codes created and identified patterns - which led to the generation of themes (Brooks et al., 2021). Interview results were summarized and shared with the participants for member checking to ensure accuracy and credibility (Hays & Singh, 2012). Following the results of the survey analyses, we presented the themes from the interviews to corroborate and assist with interpreting the survey findings (Hanson et al., 2004).

Course Syllabi. Content analysis was conducted with syllabi of the methodological courses. The content analysis allowed the researchers to examine large amounts of textual social phenomena non-invasively to determine messages, patterns, and themes (Vaismoradi et al., 2016). The goal of the content analysis was to identify specific skills and knowledge that were taught in these courses and compare them with students' self-perceived proficiency in methodology. Our main questions in the comparisons were: (a) whether the courses met the students' needs, and (b) how we could potentially fill the gaps at the program level and the institutional level.

Results

Survey

Personal Preferences. For responses on the question about the typical methodological approach, the Fisher's exact test showed that methodological approach was not independent of cohort status (p = .03), meaning the response patterns varied across cohort status (Table 1). It appeared that dissertation only students were more likely to characterize their typical

methodological approach as "quantitative," whereas Year-3 students, who were likely working on their dissertation at the time they took the survey, selected "qualitative." Additionally, Year-1 and Year-2 students were more likely to select "don't know" or "qualitative" on these questions. Overall, 46% of the respondents characterized themselves as a qualitative researcher. Accordingly, in the open-ended textbox for the question about the methodological approach one planned to use (or had used) for their dissertation, 46% of the students mentioned qualitative, 25% mentioned quantitative, and 21% mentioned mixed-methods.

Table 1

Choice of Typical Methodological Approach by Cohort Status

Cohort	Typical Methodological Approach					
	Other	Don't know	Mixed-method	Quali-tative	Quanti-tative	Total
Dissertation only	0	0	1	1	3	5
Graduated	0	0	2	0	0	2
Year 1	0	2	0	2	0	4
Year 2	0	2	1	3	0	6
Year 3	1	0	1	5	0	7
Total	1	4	5	11	3	24

Self-perceived Proficiency. When asked to list qualitative approaches or methods that one was familiar with, 71% of the students mentioned that they have conducted focus groups, 46% mentioned ethnography, 38% mentioned interview, and 62% mentioned phenomenological. Other approaches mentioned were narrative, participatory action research, grounded theory, case study, content analysis/diaries. When asked to list quantitative approaches or methods that one was

familiar with, 58% of the students mentioned ANOVA, 42% mentioned t-test, 29% mentioned

MANOVA, and 21% mentioned regression. Other methods mentioned were correlation, factor

analysis, and repeated measures ANOVA. It should be noted that no students mentioned any

advanced statistical procedures such as statistical modeling and hierarchical linear modeling.

Additionally, 83% reported that they used SPSS only in statistics classes. Participants were also

asked to rate their own level of understanding in the methods and results sections of research

articles in academic journals. In terms of qualitative studies, 75% of the participants selected

"general understanding" or "complete understanding" (Figure 1). In contrast, about 60% of the

participants selected "having difficulty understanding" or "partial understanding" when it comes

to quantitative studies (Figure 2). Moreover, these proportions were consistent across students

from different cohorts.

Figure 1

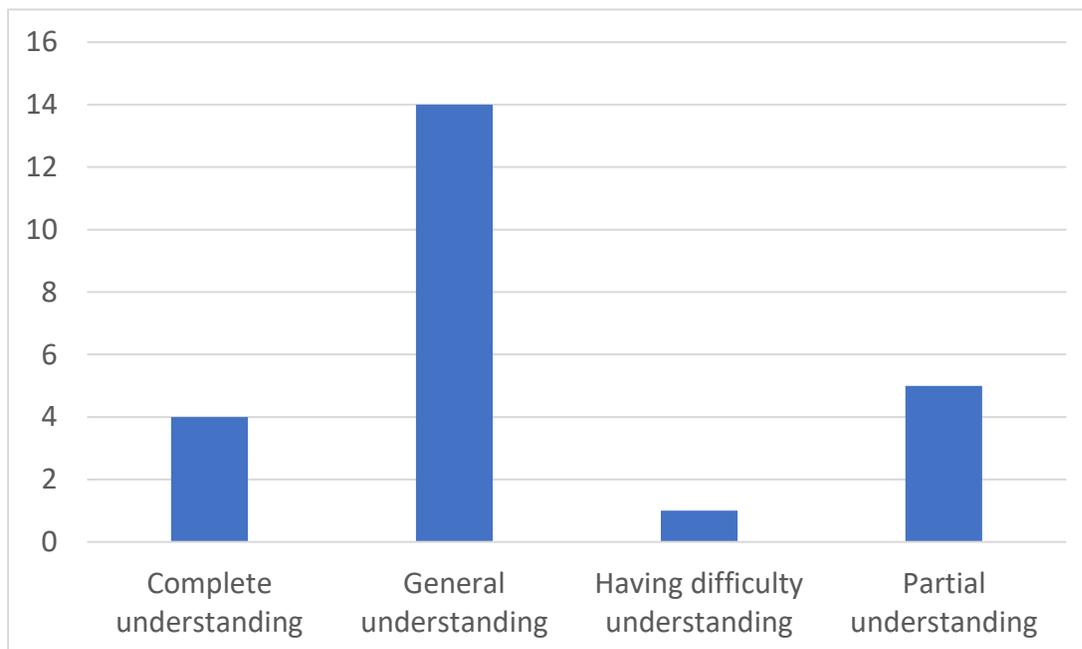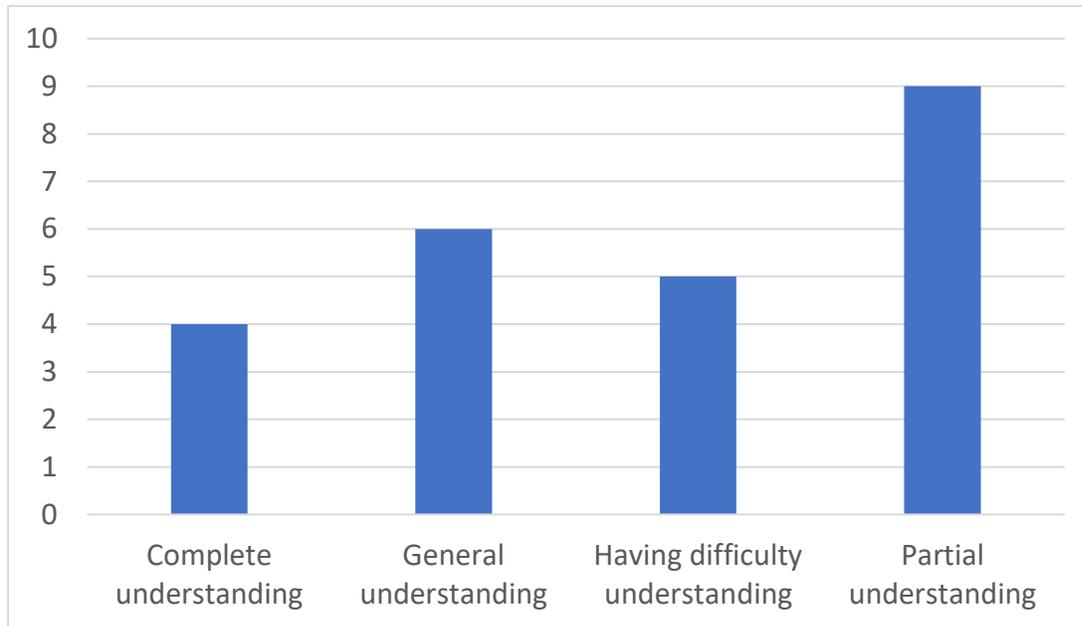*Understanding of Qualitative Analysis and Results in Journal Articles*

Figure 2

Understanding of Quantitative Analysis and Results in Journal Articles

Additional Training Needs. Students were asked to reflect on additional methodological training that they wished to have. A wide range of topics were mentioned, including specific techniques such as regression, general training such as SPSS workshop and mixed-methods design, as well as comprehensive overview such as "what method to use to answer which questions." One student wrote that a refresher statistics course towards the end of the program at the dissertation stage would be beneficial.

Interviews

In terms of previous research training and experiences, we identified two themes. First, research training varied greatly across undergraduate majors, and students came to the Ph.D. program at different levels of readiness. For example, the student who majored in Psychology took introductory and advanced research methods courses, worked as a research assistant on several projects, and conducted a senior capstone project. In contrast, the student who majored in Social

Work was primarily engaged in internships and community work without much exposure to research. The second theme was that there was a lack of a bridge from the master's program to the Ph.D. program to prepare students for conducting research. At the master's level, experiences were more homogenous because all students in the PhD program had a master's degree in Counseling. Yet, the master's program in counseling did not focus on research.

Consistent with findings from the survey, all interview participants suggested that they did not have enough experience in quantitative projects. Participants also remarked that it was challenging to master the contents in the two statistics courses, and they did not have opportunities to apply the techniques covered in class in actual research projects. Moreover, as students, they needed to be proactive to seek opportunities to collaborate with faculty members on research projects in general. Students seemed to be overwhelmed with the need to balance coursework, internship and practicum, teaching, university assistantship or other work obligations, personal life, and research in a three-year curriculum. As such, students found it difficult to develop proficiency in research methods, especially quantitative skills.

In terms of career aspirations, all three students suggested that they were interested in a career in academia and willing to delve into their topics of research interest. Participants were also eager to engage in advocacy work or take leadership roles in community agencies. However, none of these students said that they intended to devote themselves to clinical work.

Taken together, the interviewees believed that they were far from a solid mastery of research methods from courses only, and they wished for more opportunities to apply textbook knowledge to real-world projects. They were interested in research, but they needed more support and more time. To ensure the trustworthiness of these findings, we shared the themes with the participants as a form of member checking. They agreed with our summary and interpretation.

Content Analysis of Course Syllabi

There are five methodological courses in the Ph.D. program: (a) descriptive and inferential statistics, (b) multivariate analysis, (c) qualitative analysis, (d) research design, and (e) methods and models of assessment. In the descriptive and inferential statistics course, the focus is to build and consolidate basic understanding of descriptive and inferential statistics, as well as conducting analyses using statistical software (e.g., SPSS). In the multivariate analysis in research course, different types of multivariate statistics such as MANOVA and Exploratory Factor Analysis are introduced. Moreover, students are assigned datasets for analysis and required to submit written reports of data analyses through the two courses. In the qualitative research design course, different types of qualitative research designs such as narrative, phenomenology, case study, grounded theory, and ethnography designs are introduced. Also, students have opportunities to engage in the entire research process from data collection, data analysis, write up, to presentation of results. The design methodology course focuses on strengthening the students' analytical reasoning so that they are able to propose research designs that are appropriate for their research questions. Finally, the models and methods of assessment course is intended to expand the knowledge on need assessment, process evaluation, and instrument development.

The depth and breadth in methodological training offered by a combination of the five courses are consistent with the 2016 CACREP standards for doctoral programs in counselor education and supervision (CACREP, 2020). Specifically, the two quantitative research courses focus on Standard 6. B.4. a. (research designs appropriate to quantitative and qualitative research questions), and Standard 6. B.4. b. (univariate and multivariate research designs and data analysis); whereas the qualitative research course focuses on Standard 6. B.4. a. (research designs appropriate to quantitative and qualitative research questions), Standard 6. B.4.c. (qualitative designs and

approaches to qualitative data analysis qualitative designs and approaches to qualitative data analysis), and Standard 6.B.4.d. (emergent research practices and processes). Additionally, the research methodology course meets Standard 6. B.4. k. (grant proposals and other sources of funding), Standard 6. B.4. b. (univariate and multivariate research designs and data analysis), and Standard 6. B.4.c. (qualitative designs and approaches to qualitative data analysis qualitative designs and approaches to qualitative data analysis). Lastly, the models and methods of assessment course meets Standard 6. B. 4. e. (models and methods of instrument design) and Standard 6. B. 4. f. (models and methods of program evaluation are emphasized). Overall, the CACREP standards relevant to research training in doctoral programs in Counselor Education and Supervision are duly covered across the five courses.

Discussion

We conducted this exploratory study as part of the self-assessment process in an effort to enhance the learning experiences of students in our doctoral counseling program. Feedback from students suggested that students did not perceive themselves as fully proficient in research methods. For example, a good proportion of students reported that they had difficulty understanding research articles when it comes to quantitative methods, and they rarely used statistical programs outside of class settings. While the program offered a comprehensive curriculum of methodological courses, there seemed to be a misalignment between program offerings and learning needs.

Consistent with a similar but larger-scale study conducted across multiple departments within the School of Education (Ferguson et al., 2017), results from the survey and interviews suggested that most students were comfortable with qualitative methods, but quantitative competency was lacking, which could be due to lack of preparedness at the undergraduate and master's levels. Such imbalance might be potentially challenging for further research endeavor.

More importantly, for reasons that warrant further research and self-examination, students called for more opportunities to engage in research projects and enhance their skills in application.

In reference to program offerings, however, the five methodological courses expose students to different types of quantitative and qualitative research designs. Further, the course sequence is designed to enable students to progress through various levels of research sophistication. This misalignment might be explained by insight gained from the qualitative interviews. Specifically, a lack of quantitative preparedness prior to coming to the Ph.D. program makes it challenging for students to fully master the methodological course contents. Additionally, the competing priorities and lack of research opportunities during the Ph.D. program hinder students from learning research methods through applications.

We have found this initial attempt to evaluate methodological training in the Counselor Education and Supervision program successful. Students were receptive to this initiative, and the results were useful. We believe that ongoing assessment of research proficiency is crucial in any curriculum modification effort (Larson & Besett-Alesch, 2000). It is conceivable that departmental buy-in from both faculty members and students is necessary to create and sustain a data-driven decision-making culture. Careful consideration and planning are needed to ensure efficiency in data collection.

Implications for Counselor Education

Based on these findings, we reflected on what is needed to train counselor education students to take on the role of counselor-scientists. First, we need to deal with the issue of quantitative preparedness in counselor education. Consistent with previous research, we found significant variability in students' prior training experiences in research methods, especially quantitative methods. Students with certain undergraduate majors are likely to have taken more

methods-related courses or have more opportunities to engage in research projects than those with other majors. Additionally, CACREP-accredited Ph.D. programs tend to admit students with master's degree in a counseling field, given the licensure requirements (CACREP, 2021). Master's programs in counseling, however, is not designed to focus on research methods, except that students are exposed to reading empirical research publications (Peterson et al., 2015). Even though the 2016 CACREP standards specify research and program evaluation as one of the common core areas for all counseling students, master's level students are not required to write a research thesis, and the curriculum for each specialty areas focus instead on foundations, contextual dimensions, and practice (CACREP, 2021). Consequently, most students newly admitted to the counseling Ph.D. program need to be introduced (or re-introduced) basic statistical methods and concepts in research design, which means the Ph.D. curriculum has little room for courses that bring more depth and breadth in particular methodological techniques. One possible solution to this dilemma is for Ph.D. faculty members to collaborate with colleagues at master's programs to integrate examples of empirical research into counseling contents courses. Another possible solution, albeit more complex in implementation, is to introduce a bridge curriculum for master's students who intend to continue on to the Ph.D. program. The bridge curriculum can take multiple forms ranging from summer workshops, summer courses, to an extra semester of classes on research methods. Contents of the bridge curriculum can be built according to the research training needs identified by Peterson et al. (2015). As an incentive, students who completed the bridge curriculum may be issued a certificate, which attests to their ability to conduct applied research in social sciences. Then students may use this certificate in their application for Ph.D. admission or for positions in research projects or institutions.

Second, we need to provide more research opportunities for students beyond classroom instruction. Participants in the study agreed that students would certainly benefit from more opportunities to apply textbook knowledge to real-world research projects during their time in the Ph.D. program. Larson and Besett-Alesch (2000) provided an overview of curriculum modification in their program as part of the effort to enhance the scientific component in the training of counselor-researcher. Research courses were delivered as a two-year practicum, where students obtained hands-on training to use specific techniques to address questions that were of personal relevance and interest. These ideas are consistent with research on best practices in teaching research methods in social sciences (Lewthwaite & Nind, 2016). Similarly, Hays et al. (2019) proposed innovative ways to close the research–practice gap. One promising strategy is to engage with field placement sites and take advantage of clinical research opportunities in those sites. Another important aspect was to strengthen research mentorship, starting with providing ample feedback on research-related assignments. Further, programs can try to develop research teams that involve multiple stakeholders, so that students with varying backgrounds can take on a role in research.

Third, we need to support students seeking additional methodological straining. The discrepancy between student perception and program offering might be due to the fact that the curriculum does not allow elective courses on research methods, which presents some practical challenges. CACREP accredited programs are typically 60 semester hours, which equates to three academic years for full-time enrolled students. In order for students to remain competitive in the job market, the curriculum is streamlined and does not allow a great deal of flexibility. In the instances where students wish to take on more training in research design and data analytics, a few options are available beyond elective classwork. Students may receive additional training under

the mentorship or tutelage of a faculty member as part of a research team. Students could also dedicate themselves to enrolling in summer short courses offered by many institutions to enhance methodological training in social sciences. Also, professional conferences typically have educational sessions (lasting up to 3 days) for condensed introduction advanced methodological topics. As such, departments and institutions should provide financial support to encourage students to take advantage of these opportunities beyond coursework.

Last but not least, efforts to strengthen research capacity at the program and departmental levels will not succeed without the support of institutional administration. Colleges and universities have the ability to allocate funds to increase research capacity, while not every counselor education program will have the feasibility, power, organizational and political structures, resources, and stability to do so (Alastair & Christina, 2015). Institutional support is critical for enhancing the research capacity of faculty members, which will benefit the learning experiences of Ph.D. students. If faculty members from counselor education programs are provided with more protected time and internal funds for research, Ph.D. students will have more opportunities to engage in research projects.

Limitations and Future Directions

This study, due to its exploratory and descriptive nature, is limited by a small sample size and a restricted setting, as data were collected from only one university. Nonetheless, more than half of all enrolled students participated in the survey, and about 15% of students from each cohort participated in the interview. Another limitation is that we used only self-report to assess research proficiency (hence we specified our outcome as self-perceived research proficiency). Students' self-perception might not be consistent with their actual ability.

Nonetheless, the findings are highly consistent with a similar study conducted with a larger sample recruited from multiple departments within the College of Education (Ferguson et al., 2017), confirming that there is an imperative need for improvement in methodological training in counseling programs. Future research on methodological training from the perspective of counselor education programs needs to attempt ongoing, systematic assessments to evaluate within-institution program development efforts, and to conduct multi-site assessments to improve the generalizability of findings. Multiple sources of data besides students' self-report are needed to inform these assessments. Ideally, assessments are conducted in parallel with research on pedagogy innovation and curriculum modification, so that counselor education programs will be able to utilize evidenced-based practices to enhance methodological training for students and ultimately enhance the research capacity for the counseling field.

Conclusions

To conclude, students in counselor education and supervision programs did not perceive strong research proficiency, especially in quantitative methods. Students would benefit from additional training in research methodology so as to develop a solid counselor-researcher identity. Potential solutions include creating opportunities to apply knowledge and skills learned in courses to actual research projects, creating opportunities for elective courses, and creating a bridge program for master's students transitioning to a doctoral program. Finally, institutional and leadership support is needed to enhance research productivity for both faculty and doctoral students. Given that ongoing assessment of methodological proficiency provides a basis for pedogeological and curriculum improvement efforts, we need to generate organizational buy-in for adopting data-driven principles in program improvement efforts.

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